

- 12 -

CLAIMS:

1. A process for preparing food contact grade PET from a waste stream containing PET and non PET materials comprising the following steps:
 - sorting at least some of the non PET materials from the waste stream;
 - 5 dividing the PET containers into flakes;
 - washing the flakes in a hot aqueous medium containing alkaline materials and surfactants to remove particulate and absorbed contaminants from the surfaces of the flakes;
 - de-watering and then drying the flakes to a moisture content of 0.1% w/w
 - 10 maximum;
 - melting the flakes in a screw extruder under vacuum to remove absorbed contaminants; and
 - extruding the molten material to form strands that are pelletised.
- 15 2. A process according to claim 1 wherein there is a further heating and mixing step, before the extruder, that heats and vigorously mixes the flakes under vacuum at a temperature less than the melting point of PET.
3. A process according to ~~claim 1~~ or ~~claim 2~~ wherein the surfactants in the
- 20 flake washing step are non-ionic.
4. A process according to ~~any one of claims 1 - 3~~ wherein the maximum moisture content of the flakes after the drying step is 0.01% w/w.
- 25 5. A process according to ~~any one of claims 2 - 4~~ wherein the heating and mixing step is conducted at a reduced pressure of 1 - 10 millibar.
6. A process according to ~~claim 5~~ wherein the pressure is in the range of 2 - 7 millibar.

30

- 13 -

7. A process according to any one of claims 2 – 6 wherein the heating and mixing step is conducted at a temperature in the range 170 – 200°C for at least 30 minutes.
- 5 8. A process according to claim 7 wherein the heating and mixing step is conducted for at least 60 minutes.
9. A process according to any one of claims 1 – 8 wherein the material in the extruder is maintained at a temperature in the range 280 – 290°C for less
10 than sixty seconds at a reduced pressure of 1 millibar or less.
10. A process according to any one of claims 1 – 9 wherein a chemical chain extender is used to increase the molecular weight of the recycled PET.
- 15 11. Recycled food contact grade PET prepared according to a process as defined in any one of claims 1 – 10.